

WHY ARE BREWERIES PRIORITISING SUSTAINABILITY AND HOW CAN THEY DELIVER FOR INCREASINGLY ECO-CONSCIOUS CONSUMERS?



Amidst the impacts of climate change worldwide, the brewing industry has a heightened incentive for sustainable approaches. A warmer climate is particularly challenging for beer producers because each of the three main ingredients including water, but also barley and hops — is affected. This poses a significant challenge for breweries globally, emphasizing the urgency of sustainability strategies within the industry.

A series of challenges

Data from the World Resource Institute shows that 25 countries¹ — housing one-quarter of the global population — face extremely high water stress each year, meaning they use over 80% of their entire available water supply. The most water-stressed regions are the Middle East and North Africa, where 83% of the population is exposed to extremely high water-stress, and South Asia, where 74% is exposed. Global water demand is projected to increase by 20% by 2050, which will continue to put pressure on the supply.

Freshwater shortages and the degradation of natural ecosystems are not just impacts the brewery industry is aiming to limit, but they are also issues that threaten business. The impact of dwindling water supplies on barley cultivation is well documented.² It's a crop that requires 15-17 inches of water to complete its growth cycle.

But it's not just a lack of freshwater posing a threat to breweries. Climate change can disrupt the availability and quality of key ingredients, with temperature changes and precipitation patterns disrupting crop yields, leading to potential shortages and price fluctuations. Scientific research

shows that, with each degree of higher average global temperature, average yields of wheat, rice and corn would fall by 6%, 3.2% and 7.4% respectively³.

Variations in temperature and weather can also impact the flavours and characteristics of ingredients which can, in turn, impact the consistency and quality of beer too. Meanwhile, extreme weather events, such as hurricanes, floods, and wildfires, can disrupt supply chains, making it difficult to source ingredients and distribute finished products.

The good news is that potential mitigation actions are plentiful. Breweries have responded very well to the challenges presented, not only by the climate crisis, but by government policy and regulation designed to improve corporate sustainability and shifting consumer preferences for brands to act in the interests of planet and people, not just profit.

Large breweries use between 2.5 and 3.5 hectolitres (hL) of water per hL of beer which is lower than the average use for most modern breweries (4-10 hL/hL).⁴ By continuing to drive key water-saving initiatives, all major breweries will further decrease their water use by 2030, to between 1.7-3.3 hL/hL.

1 <https://www.wri.org/insights/highest-water-stressed-countries>
2 <https://www.sciencedirect.com/science/article/abs/pii/S1161030119300243>
3 <https://www.pnas.org/doi/10.1073/pnas.1701762114>
4 https://essay.utwente.nl/79560/1/Zhao_MA_BMS.pdf



To safeguard at-risk watersheds, Molson Coors implemented stewardship programs in collaboration with private and public stakeholders with the aim of protecting the shared water resources. One such initiative has seen almost 200 landowners commit to improving their water use practices over 35,000 acres of land.⁵ And Carlsberg is investing in research to understand how to make more use of crops that are tolerant to drought.⁶ The scientists at Carlsberg Research Laboratory have developed, through selective breeding, a new variety of barley that reduces the amount of energy and synthetic inputs needed for the malting and brewing processes by achieving the desired flavour with less kilning, evaporation and filtration.

Many breweries have also started to rethink how they treat their wastewater, which often contains nutrients or by-products. Treating water through on-site facilities or green infrastructure, such as constructed wetlands, is the responsible thing to do. In 2022 alone, Heineken built 3 wastewater treatment plants and 179 of their 186 sites have wastewater treatment, which is bringing them close to their goal of treating 100% of their wastewater by the end of 2023.⁷ Carlsberg is making good progress in recycling water. At its Fredericia brewery in Denmark, the firm has piloted a total water recycling plant to reuse 90% of process wastewater, while reducing energy consumption by 10% through biogas production and the recirculation of hot water.⁸

Cutting energy use

Adopting energy efficiency measures by embracing energy-efficient technologies and using more renewably-produced energy – whether onsite, using solar panels, or buying green energy – can help to reduce the carbon footprint of the brewing process.

According to IFF's own lifecycle assessment (LCA), designed to assess the true environmental impact of a product or production system, using enzymes in the brewing process can seriously reduce the overall environmental impact of making beer – and save money. By supplementing natural enzymes in the mash, ALPHALASE® AP4 enables the use of raw barley which means the energy- and water-intensive malting process can be avoided and boosts the conversion yield of barley to beer. While results may vary by geography, breweries can cut their water use by 0.91 liters per liter of beer on a life cycle basis using 100% barley in lieu of malted barley. Over half of the energy used for the barley-to-wort extract can be saved,

with ~90% of this coming from eliminating the need for energy use in the malting process. Incredibly, if only 5% of Europe's brewers that use exogenous enzymes switch to barley brewing with ALPALASE® AP4, the climate benefits amount to the same as installing 21 wind turbines. And the energy savings would be around 153 million kWh of electricity – enough to power more than 56,000 UK homes a year.

Enzymes also enable brewers to experiment with alternative raw materials too, a move which brings a range of sustainability benefits. Using more locally-grown raw materials – cassava or sorghum in place of traditional malted barley – reduces the impact of shipping, for instance. And with consumers increasingly looking for more authenticity from beer brands,⁹ locally sourced ingredients delivering new flavours or gluten-free options ticks plenty of boxes.

However, effective communication and engagement is crucial if consumers are to buy into, understand, acknowledge and differentiate a sustainable beer brand from any other. The large majority (78%) of US consumers say that despite wanting to support companies that align with their values, they don't know how to identify environmentally friendly companies.

Resource efficiency = commercial success

The cost savings associated with enhanced sustainability performance are significant. According to McKinsey, there is evidence that being more efficient at using resources is a strong indicator of superior financial performance overall. In a study, the organisation found a "significant correlation (95 to 99 percent confidence) between resource efficiency and financial performance in sectors as diverse as food products, specialty chemicals, pharmaceuticals, automotive, and semiconductors".¹⁰

But cost savings are only part of the story. Responsible, transparent, ethical, and carbon-saving beer makers will find growing new markets of eco-conscious consumers and build the foundations for success for years to come. 89% of the academic studies reviewed by Deutsche Bank show that companies with high ESG ratings outperform the market in the medium (3-5 years) and long (5-10 years) term.¹¹

5 <https://www.molsoncoors.com/sustainability/sustainably-brewing/water/working-in-our-brewery-watersheds>

6 <https://www.bloomberg.com/news/articles/2023-01-20/carlsberg-developing-beer-with-ingredients-than-can-survive-global-warming>

7 https://www.theheinekencompany.com/sites/theheinekencompany/files/Investors/financial-information/results-reports-presentations/Heineken-NV-AR-2022--23_02_2023_1.pdf

8 <https://www.carlsberggroup.com/sustainability/case-stories/halving-water-usage-at-fredericia-brewery/>

9 <https://www.bain.com/insights/purpose-led-brands-can-reshape-the-consumer-goods-industry-if-they-can-scale/>

10 <https://www.mckinsey.com/~/media/McKinsey/Business%20Functions/Sustainability/Our%20Insights/Profits%20with%20purpose/Profits%20with%20Purpose.ashx>

11 Sustainable Investing: Establishing Long Term Value and Performance, DB Climate Change Advisors, Deutsche Bank Group, 2012, www.dbadvisors.com

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